Sai Aditya Thalluri(101863023)

ECE 533 Digital Image Processing – Homework 4

Test Results:

- After training the model we will save it to the disk.

```
# Train model on dataset
model_metrics = model.fit_generator(generator=training_generator,
                                    validation_data=validation_generator,
                                    use_multiprocessing=False,
                                    workers=1,
                                    epochs=100)

print(model_metrics.history['acc'])

#Save the trained model to disk
model.save("modal.h5")
```

- While executing the code for testing, we will load the save model and predict any of the faces from the testing video. The model should determine whether the face is talking or not talking. We will pass the numpy array of face to the model.

Testing.py - E:/Education/UNMSEM-1/Digital Image Processing/FinalAssignment/Submissio

File Edit Format Run Options Window Help

```
import cv2
import pickle
import numpy as np
import keras
from keras.models import Sequential
import pdb
import os

 #Testing

#Load the Trained Model from disk

model = load('model.h5')

print('\n Testing Face 2 from Testing video')
xtest = nt_files[1]
xtest = np.load("faces/nt/"+xtest)
xtest = np.expand_dims(xtest,axis=0)

#xtest = scalar.fit_transform(xtest)



result = model.predict(xtest)
print(result)
ypred = []
if result[0][0]>0.5:
    print('Not talking')
    ypred.append(0)
else:
    print('Talking')
    ypred.append(1)


print(ypred)
```

- Output:

```
 Testing Face 2 from Testing video
[[0.5759882  0.51171184]]
Not talking
[0]

(tf) E:\Education\UNMSEM-1\Digital Image Processing\FinalAssignment>
```

```
 Testing Face 3 from Testing video
[[0.5382492  0.41344342]]
Not talking
[0]

(tf) E:\Education\UNMSEM-1\Digital Image Processing\FinalAssignment>
```

- Here we have to determine the result, we have considered in such a way that if the prediction of the model is greater than 50% then it is not a talking face. Other it is talking face. Since we have trained the model with only two classes, it is a binary classifier
- Save the model to the disk makes it easier to carry the tests independently.
- While the testing is carried out on a single numpy array, it should be extended to all the numpy arrays of given face through out the video to figure if its talking or not.